IN THE CLAIMS

The following is a complete, marked up listing of revised claims with a status identifier in parentheses, underlined text indicating insertions, and strikethrough and/or double brackets indicating deletions.

1. (Previously Presented) A method for transporting electrically charged molecules in an aqueous solution, the method comprising:

arranging, in the vicinity of two measuring electrodes, a metallic material which is resistant in the aqueous electrolyte and is more electronegative than that of the measuring electrode, the metallic material being arranged as an electrode to which a potential can be applied; and

bringing the metallic material, as a result of a positive potential being applied to the arranged electrode, into solution as positive ions,

whereby negatively charged molecules are transported as target molecules in a direction of the arranged electrode to which a positive potential is applied and are enriched at the measuring electrodes.

2. (Previously Presented) The method as claimed in claim 1, wherein the metal ions going into solution are complexed by the presence of a complexing agent, whereby their concentration is kept low and virtually constant.

3. (Previously Presented) The method as claimed in claim 2, wherein copper is used as the metallic material, the copper forming a copper sacrificial anode.

4. (Previously Presented) The method as claimed in claim 3, wherein histidine is used as a complexing agent for complexing the copper ion.

5. (Previously Presented) The method as claimed in claim 1, wherein catcher molecules at an electrode surface are used for detecting the target molecules.

6. (Previously Presented) The method as claimed in claim 5, wherein thiol-modified capture molecules are used as capture molecules.

7. (Previously Presented) The method as claimed in claim 5, wherein hydrogel-bound molecules are used as capture molecules.

8. (Previously Presented) The method as claimed in claim 1, wherein an electrophoresis method is performed.

9. (Previously Presented) The method as claimed in claim 1, wherein a DNA analysis of DNA fragments is effected.

10. (Previously Presented) The method as claimed in claim 9, wherein the enriched molecules are detected as target molecules during the DNA analysis.

11. (Previously Presented) The method as claimed in claim 8, wherein the selectivity of the process is increased by polarization of the electrodes used for the electrophoresis or DNA analysis.

12. (Previously Presented) A method for binding-specific separation of electrically charged molecules in an aqueous solution, during the operation of a sensor with a cycling process between two measuring electrodes, the method comprising:

situating metal ions in the aqueous solution;

depositing, as a result of a negative potential being applied to the measuring electrodes, the metal ion as metal at the measuring electrodes,

whereby negatively charged molecules bound in the vicinity of the measuring electrodes are transported away from the measuring electrodes as target molecules with a sufficiently low binding energy.

13. (Previously Presented) The method as claimed in claim 12, wherein copper is used as metal ions and gold is used as measuring electrodes.

14. (Previously Presented) The method as claimed in claim 12, wherein the molecules transported away from the measuring electrodes are those target molecules which are not intended to be detected during a DNA analysis.

15. (Cancelled).

16. (Previously Presented) The method as claimed in claim 1, wherein the measuring electrodes comprise noble metal.

17. (Previously Presented) The method as claimed in claim 1, wherein the metallic material is copper and forms a sacrificial electrode.

18. (Previously Presented) The method as claimed in claim 16, wherein the measuring electrodes made of gold have a sensor surface to which capture molecules for the target DNA are bound.

19. (Previously Presented) The method as claimed in claim 1, wherein the measuring electrodes form an interdigital structure including comb electrodes with intermeshing electrode fingers.

20. (Previously Presented) The method as claimed in claim 17, wherein the sacrificial electrode is arranged annularly around the comb electrodes.

21. (Currently Amended) The method as claimed in claim 1, having a hydrogel layer for binding the capture ~~and~~ molecules ~~is~~ arranged on the measuring electrodes.

22. (Previously Presented) The method as claimed in claim 1, wherein the measuring electrodes are assigned separate reaction areas for attachment of the capture molecules.

23. (Previously Presented) The method as claimed in claim 19, wherein an array having m rows and n columns is formed by individual interdigital structures with sacrificial electrode.

24. (Previously Presented) The method as claimed in claim 23, wherein an auxiliary electrode with respect to the individual sacrificial electrodes runs annularly around the m·n array.

25. (Previously Presented) The method as claimed in claim 1, wherein the method is for transporting electrically charged molecules in an aqueous solution during the operation of a DNA sensor with a redox cycling process between the two measuring electrodes.

26. (Previously Presented) The method as claimed in claim 1, wherein copper is used as the metallic material, the copper forming a copper sacrificial anode.

27. (Cancelled).

28. (Previously Presented) The method as claimed in claim 16, wherein the measuring electrodes form an interdigital structure including comb electrodes with intermeshing electrode fingers.

29. (Previously Presented) The method as claimed in claim 18, wherein the measuring electrodes form an interdigital structure including comb electrodes with intermeshing electrode fingers.